



Determinants of referrals from paraprofessionals to veterinarians in Uganda and Kenya



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ABSTRACT

Referrals between paraprofessionals and veterinarians are seen as a solution for improving disease surveillance, detection, and reporting as well as ensuring prudent use of antimicrobial agents in animals. This paper used data collected from paraprofessionals in Kenya and Uganda to identify factors influencing referrals to veterinarians by paraprofessionals using a probit regression model. The results show that the determinants of paraprofessional referrals to veterinarians include the following: paraprofessional's mobile phone ownership, gender, and training, as well as attendance of short term trainings, annual assessments, and membership in paraprofessional associations. The paper argues that legislation or supervision of paraprofessionals as well as expansion of mobile phone ownership by paraprofessionals, supporting the formation of paraprofessional associations, and investing in short term training are important factors for strengthening referrals from paraprofessionals to veterinarians.

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1. Introduction

In the 1980s, governments of developing countries shifted their policies for providing veterinary services from state-led to market-led approaches and limited their role to the supply of public goods services, such as vaccination, meat inspection, and the control of zoonotic and contagious animal diseases. However, market-led approaches have performed below expectation, especially in rural and marginal areas because of pervasive market and governance challenges (Pica-Ciamarra and Otte, 2008; Racz et al., 2013). As a result, the focus has shifted from the debate on market-led versus state-led services to improving the quality and coverage of both private

and public veterinary services to reduce the negative impacts of animal diseases on public health and food security (Pica-Ciamarra and Otte, 2008). Over-reliance on the paraprofessionals in most developing countries, including Kenya and Uganda, has been associated with imprudent use of antimicrobial agents (De Haan et al., 2001; Peeling and Holden, 2003). This has affected on-farm food safety management, resulting in increased antimicrobial resistance in both animals and humans (Schneider, 2006; Pastoret and Chaisemartin, 2011). Reducing the negative impacts of animal diseases on public health and food security requires effective and timely animal disease surveillance, detection, reporting, and response as well as a prudent use of veterinary drugs, in particular antimicrobial agents (Angulo et al., 2004; Jebara, 2004; King et al., 2004; Kahn, 2006; Dórea et al., 2011; Grace et al., 2012).

To improve the quality of veterinary services and reduce animal disease-related risks through correct disease diagnosis and adequate drug prescription, the expert committee of World Animal Health Organization strongly

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recommends strengthening linkages between individual veterinarians and paraprofessionals (Vallat, 2004). Woodford (2004) and Ahuja and Kurup (2006) argue that paraprofessionals should refer to veterinarians to ensure appropriate prescription of drugs and adherence to standards of veterinary practice. In addition, Catley and Leyland (2004) argue that referrals would prevent misdiagnosis and incorrect drug usage, as well as improve disease surveillance and reporting. Referrals are also critical in sustaining the delivery of quality veterinary services, especially in marginal areas, which typically have the lowest ratio of veterinarians to animal population (Leyland and Catley, 2002; Hassan, 2003; Catley and Leyland, 2004; Diop and Bessin, 2004). Lastly, Koma (2000) argues that referral networks are important for veterinarians to stay in business since paraprofessionals already have well established markets due to the reluctance of farmers to pay premiums to veterinarians for services that can also be provided by paraprofessionals. Moreover, paraprofessionals are closer and more easily accessible to farmers than veterinarians.

To the best of our knowledge, there has been no empirical study examining factors that influence referrals from paraprofessionals to veterinarians in a developing country. In addition, much of the focus on strengthening referrals between paraprofessionals and veterinarians has been on improving veterinary legislations and building the capacity of regulatory institutions to supervise paraprofessionals. However, no study has been conducted to examine whether such supervision indeed has a positive impact on referrals between paraprofessionals and veterinarians. As argued by Leonard (2000), supervision may increase conflict between veterinarians and paraprofessionals because veterinarians tend to treat paraprofessionals as subordinates rather than as colleagues. This often interferes with a positive relationship between paraprofessionals and veterinarians and negatively affects referrals (Leonard, 2000). Moreover, legislation and supervision have budgetary implications because they may involve recruiting more veterinarians who have to be paid and facilitated to perform their duties. According to Rubarema (2010), this makes veterinary legislation less attractive to policy makers. Therefore, alternative ways of building referral networks need to be devised.

The objective of this paper is to assess whether supervision and other factors influence referrals from paraprofessionals to veterinarians. To achieve this objective, the paper uses cross-sectional data from service provider surveys conducted in Kenya and Uganda. A probit regression model is applied to determine the factors that influence the likelihood of a paraprofessional's decision to refer a case to a veterinarian in any given year.

2. Materials and methods

2.1. Data

The data used in this study were collected in 2012 from animal health service providers in the districts of Kiambu and North Pokot in Kenya and in the districts of Mukono and Amudat in Uganda. Mukono and Kiambu districts are located in a region where intensive livestock production

systems are practiced, while Amudat and North Pokot districts are located in a region characterized by pastoral systems. The two production systems differ in terms infrastructure and in the supply of and demand for animal health services. These are the most important factors influencing the development of sustainable animal health service delivery systems and also the category of veterinary paraprofessionals operating in the particular area (Woodford, 2004). Most veterinary paraprofessionals in the pastoral areas, often called Community Animal Health Workers (CAHWs), have no formal education but receive a short training of about three weeks (Mugunieri et al., 2004). The other categories of paraprofessionals are those with diplomas or certificates in animal health and are mainly found in the intensive system (Oruko and Ndung'u, 2009).

According to the World Animal Health Organization (OIE), a veterinary paraprofessional is "a person who, for the purposes of the Terrestrial Animal Health Code, is authorized by the veterinary statutory body to carry out certain designated tasks (dependent upon the category of veterinary para-professional) in a territory, and delegated to them under the responsibility and direction of a veterinarian" (OIE, 2013). This definition implies that all service providers do not hold degrees in veterinary medicine qualify as veterinary paraprofessionals if they are mandated and recognized by the veterinary statutory body. For the purpose of this analysis, we consider all service providers who lack a degree in veterinary sciences as paraprofessionals. This is because many service providers are not mandated by the veterinary statutory body and are not under the direction or supervision of veterinarians (even in Kenya).

To collect data for this study, a total of 88 service providers, including 6 veterinarians and 82 paraprofessionals were interviewed. In Uganda, 12 out of the estimated total of 15 paraprofessionals operating in Mukono district were interviewed, and 26 out of the estimated 30 paraprofessionals operating in Amudat district. In Kenya, 42 out of the estimated 55 paraprofessionals operating in Kiambu district were interviewed. The only two paraprofessionals in North Pokot district were also interviewed. There are few paraprofessionals in this district because Kenya's veterinary board outlawed paraprofessionals who lack formal training in animal health. They are the only service providers in this district. However, paraprofessionals from Amudat district extend their services to North Pokot district. The two districts border each other, movement is free and the inhabitants are of the same tribe (the Pokots). In the pastoral districts of Amudat and North Pokot, we were not able to interview veterinarians because the only veterinarian operating in each district could not be reached during the three weeks we were present in each district, because they were always absent from the district because they had to report to ministry, attend workshops or to see their families since they are not natives of the area. In Mukono district, we were only able to interview one veterinarian because out of 11 veterinarians residing in this district, he was the only one actively involved in the provision of veterinary services. In Kiambu district, we were able to interview five veterinarians, three of whom were private service providers and two were government veterinarians.

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